

REMARKS

Status of the Claims

Claim 2 is amended to clarify the invention and specify that the first and second speakers are positioned between the first and second outlets. A similar amendment is also made in claim 18. In view of the clarifying amendment to claim 2, the phrase “such that tube paths of the at least one first tube and the at least one second tube are formed to meet intermediate the first and second speakers” has been removed from claim 2 and inserted into new dependent claims 23 and 29. New dependent claims 24 to 28, 30 and 31 have also been added to further define the configuration of the tubes and speakers. Support for the amendments and new claims can be found at page 8, line 15 through to page 9, line 8 as well as on description page 7, line 8 and in Figure 2. Claims 14 and 21 are amended to provide proper claim dependency. Claims 3, 5-13, 15-17 and 19-20 are unchanged from Applicant’s last amendment, and claims 1, 4 and 22 were previously canceled. Applicants respectfully submit that no new matter has been added by virtue of this amendment.

Claim Objections

On page 2 of the Office Action, the Examiner has correctly noted that claim 14 is dependent on a canceled claim, i.e. claim 4. The dependency is accordingly hereby corrected such that claim 14 is now properly dependent on claim 5. Reconsideration and withdrawal of the objection is respectfully requested.

Rejection Under 35 U.S.C. § 102

On page 2 of the Office Action, claims 2, 5-6, 15-16 and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Yuugo (JP 57-041095). Applicant disagrees and traverses the rejection in view of the amended claims submitted herewith.

As noted above, claim 2 is amended to specify that the first and second speakers are “positioned between the first and second outlets”. A similar amendment is also made in claim 18. This subject matter differs from Yuugo which illustrates (in Figure 4 and in the Abstract) speakers situated in the left and right ear pieces, i.e. not between the ear pieces or outlets, and with a hollow tube that appears to simply allow sound to pass from one ear piece to the other. This important distinction is discussed in further detail below.

Path delay is one of the mechanisms that the brain uses to determine sound source orientation. Maximum path length difference or time delay will occur when a sound wave approaches from the side of the head, as shown below in Figure 1. The sound path length for this orientation is equal to $a + a\frac{\pi}{2}$, where a is the radius of the head.

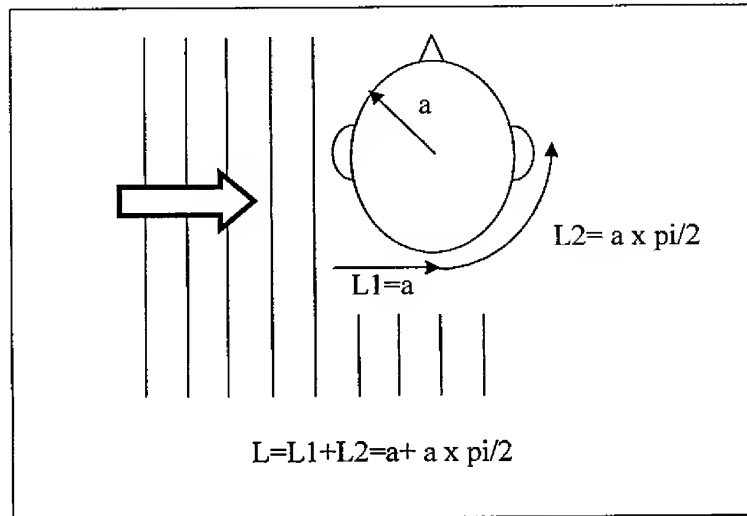


Figure 1 – Longest delay experienced between ears is with sound at 90 degrees to one side of the listener. Acoustic path length around the head for a sound wave to impinge one ear and then the other is shown.

According to the presently amended claims, all path lengths from the sound source to ear, are less than this because the first and second speakers (as well as the third and fourth speakers recited in claim 18 and other sound positioning speakers as encompassed within the claims) are placed along the tube length between the two outlets to the user's ears.

The Yuugo reference does not have speakers along the tube that connects the two earcups. Instead the speakers are situated in the ear pieces, and the hollow tube ports the sound from one earcup to another. As shown below in Figure 2, the path length for this orientation is $(a + \Delta) \times \pi$. In this equation, Δ is some small distance because the center of the tube is spaced a small distance away from the head. This length contrasts the maximum path length difference explained above. Thus, this path length will have no value in the brain's ability to "decode" the

spatial orientation. The associated time delay does not associate with any angle of incidence of incoming sound and is thus not useful for spatial orientation. Thus, while Yuugo does illustrate a tube to port the two earcups to each other, the speakers are not situated along the length of the tubes where they would need to be to produce time delays that can be interpreted by the brain for spatial orientation.

The Examiner has also specifically rejected claim 6 alleging that Yuugo describes a headset apparatus of claim 2, and further in which the first and second outlets each flare outwardly in a direction away from the first and second tubes respectively. Applicants cannot find any Figure in Yuugo that shows that the outlets of tube (9) are outwardly flared, and therefore respectfully traverse the rejection.

For at least the reasons provided above, Applicants respectfully submit that claim 2 and all claims dependent thereon distinguish from Yuugo and therefore comply with 35 U.S.C. § 102(b). Reconsideration and withdrawal of the rejection is respectfully requested.

Rejections Under 35 U.S.C. § 103

Yuugo and Meucci Jr.

On page 5 of the Office Action, claims 3, 7-11 and 17-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuugo and Meucci Jr. (U.S. 6,038,330). Applicant disagrees and traverses the rejection in view of the amended claims submitted herewith.

As noted above, claim 2 has been amended to specify that the first and second speakers are “positioned between the first and second outlets”. Applicants have already discussed above the difference between claim 2 and Yuugo.

Claim 3 is dependent on claim 2, and therefore incorporates all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also apply to claim 3, which further defines the speaker chamber of claim 2 as “an acoustically sealed, ported or vented chamber”.

The Examiner acknowledges that the subject matter of claim 3 is not disclosed by Yuugo, although it is alleged that Meucci Jr. describes a headset having a chamber that is acoustically sealed, ported or vented and that, accordingly, this feature is obvious.

However, Meucci Jr. does not describe or suggest that the first and second speakers are as defined in claim 2 i.e. “positioned between the first and second outlets”. As a result, Meucci Jr.

adds nothing to Yuugo that would, by combination of these references, render claim 2 obvious. By incorporation of the subject matter of claim 2 though dependency thereon, claim 3 is similarly non-obvious.

Claim 7 is also dependent on claim 2, and incorporates all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also apply to claim 7, which further defines the speaker chamber of claim 2 as “a vented or ported chamber”. The Examiner indicates that this feature is obvious for the same reasons provided concerning claim 3.

However, Meucci Jr. does not describe or suggest that the first and second speakers are as defined in claim 2, i.e. “positioned between the first and second outlets”. As a result, Meucci Jr. adds nothing to Yuugo that would, by combination of these references, render claim 2 obvious. By incorporation of the subject matter of claim 2 though dependency thereon, claim 7 is similarly non-obvious.

Claims 8 to 11 are also dependent on claim 2, either directly or indirectly, and incorporate all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also apply to claims 8 to 11, which further define the speaker chamber of claim 2 as being “provided with sound absorbing material on a rearwardly disposed interior surface thereof” (claim 8) or at least one of the first and second tubes of claim 2 as being “provided with sound absorbing material therein between a respective first end thereof and a respective first or second speaker” (claim 9), either substantially (claim 10) or partially (claim 11) blocking the at least one of the first and second tubes.

The Examiner acknowledges that the subject matter of claims 8 and 9 is not disclosed by Yuugo, although it is alleged that Meucci Jr. describes a headset having a speaker chamber and tubes provided with sound absorbing material and that, accordingly, these features are obvious.

However, Meucci Jr. does not describe or suggest that the first and second speakers are as defined in claim 2 i.e. “positioned between the first and second outlets”. As a result, Meucci Jr. adds nothing to Yuugo that would, by combination of these references, render claim 2 obvious. By incorporation of the subject matter of claim 2 though direct or indirect dependency thereon, claims 8 to 11 are similarly non-obvious.

In addition, Applicants respectfully submit that Meucci Jr. does not show sound absorption material in the sound transmission tubes themselves, nor on the rear interior surface

of the speaker chamber. Rather, the sound absorption material of Meucci Jr. is placed on the interior surface of the ear cup and outside the sound focusing inner tube 56 (see Fig. 5). Claims 8 to 11 specify the placement of sound absorbing material at locations where high air motion exists, and/or at locations inside the sound transmission tube(s) which reduce the tube diameter and create a controlled amount of damping within the tube. This provides a reduction in resonance, or tube-like sound. Claims 8-11 are therefore not rendered obvious by Yuugo and Meucci Jr.

Claims 17 to 19 are also dependent on claim 2, either directly or indirectly, and incorporate all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also apply to claims 17 to 19, which further define the headset apparatus of claim 2 as comprising four or more speakers (claim 17), with at least third and fourth tubes (as defined in claim 18) and the speakers specified as front-left, front-right, rear-left and rear-right (as defined in claim 19).

The Examiner acknowledges that the subject matter of claim 17 is not disclosed by Yuugo, although it is alleged that Meucci Jr. describes a headset having four or more speakers and that, accordingly, these features are obvious.

However, Meucci Jr. does not describe or suggest that the first and second speakers are as defined in claim 2 i.e. “positioned between the first and second outlets”, nor that the third and fourth speakers are as defined in claim 18, i.e. “positioned between the third and fourth outlets”. As a result, Meucci Jr. adds nothing to Yuugo that would, by combination of these references, render claim 2 or 18 obvious. By incorporation of the subject matter of claim 2 though direct or indirect dependency thereon, claims 17 and 19 are similarly non-obvious. Reconsideration and withdrawal of the rejection is respectfully requested.

Yuugo

On page 9 of the Office Action, claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuugo. Applicant disagrees and traverses the rejection in view of the amended claims submitted herewith.

As noted above, claim 2 has been amended to specify that the first and second speakers are “positioned between the first and second outlets”. Applicants have already discussed above the difference between claim 2 and Yuugo.

Claim 14 is dependent on claim 5 which is dependent on claim 2, and therefore both claims 14 and 5 incorporate all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also apply to claim 14. Claim 14 further defines the headset apparatus of claim 2 as comprising ear engaging members for housing the first and second outlets (per claim 5), “wherein the ear engaging members are provided with sound absorbing material on an inner surface thereof”.

The Examiner acknowledges that the subject matter of claim 14 is not disclosed by Yuugo, although it is alleged that providing ear engaging members with sound absorbing material on an inner surface is obvious.

However, it is not obvious to position the first and second speakers “between the first and second outlets” as defined in claim 2. By incorporation of the subject matter of claim 2 though dependency thereon, claim 14 is similarly non-obvious. Reconsideration and withdrawal of the rejection is respectfully requested.

Yuugo and Yamagishi

On page 9 of the Office Action, claims 12-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuugo in view of Yamagishi (U.S. 5,459,290). Applicant respectfully disagrees and traverses the rejection in view of the amended claims submitted herewith.

As noted above, claim 2 has been amended to specify that the first and second speakers are “positioned between the first and second outlets”. Applicants have already discussed above the difference between claim 2 and Yuugo.

Claims 12 and 13 are dependent on claim 2, either directly or indirectly, and therefore incorporate all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also apply to these claims. Claim 12 specifies that the headset apparatus of claim 2 comprises at least one bass speaker adjacent the user ear, and claim 13 further specifies that the at least one bass speaker is housed within an ear engaging member.

The Examiner acknowledges that the subject matter of claim 12 is not disclosed by Yuugo, although it is alleged that Yamagishi discloses a headset having a bass speaker adjacent a user’s ear and that, accordingly, this feature is obvious. The Examiner further contends that housing the bass speaker within an ear engaging member is obvious.

However, Yamagishi does not describe or suggest that the first and second speakers are as defined in claim 2 i.e. “positioned between the first and second outlets”. As a result, Yamagishi adds nothing to Yuugo that would, by combination of these references, render claim 2 obvious. By incorporation of the subject matter of claim 2 though direct or indirect dependency thereon, claims 12 and 14 are similarly non-obvious. Reconsideration and withdrawal of the rejection is respectfully requested.

Yuugo and Shin

On page 10 of the Office Action, claim 21 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuugo in view of Shin (U.S. Pat. Pub. 2002/0094094 A1). Applicant respectfully disagrees and traverses the rejection in view of the amended claims submitted herewith.

As noted above, claim 2 has been amended to specify that the first and second speakers are “positioned between the first and second outlets”. Applicants have already discussed above the difference between claim 2 and Yuugo.

Claim 21 is dependent on claim 2, and therefore incorporated all of the subject matter thereof. Accordingly, the comments provided above with respect to how claim 2 distinguishes from Yuugo also applies to this claim. Claim 21 further specifies that the headset apparatus of claim 2 comprises “a slider joint between the ear engaging members and the first and second outlets for enabling adjustment of a connection length between the ear engaging members and the first and second outlets when the user ear is moved relative to the headset apparatus”.

The Examiner acknowledges that the subject matter of claim 21 is not disclosed by Yuugo, although it is alleged that Shin discloses a system with a slider joint between the ear engaging members for enabling adjustment of the length therebetween and that, accordingly, this feature is obvious.

However, Shin does not describe or suggest that the first and second speakers are as defined in claim 2 i.e. “positioned between the first and second outlets”. As a result, Shin adds nothing to Yuugo that would, by combination of these references, render claim 2 obvious. By incorporation of the subject matter of claim 2 though dependency thereon, claim 21 is similarly non-obvious. Reconsideration and withdrawal of the rejection is respectfully requested.

In view of the foregoing, it is respectfully urged that the present claims are in condition for allowance and reconsideration is requested. An early notice to this effect is earnestly solicited. Should there be any questions regarding this application, the Examiner is invited to contact the undersigned at the number shown below. In the event that the Office determines that additional fees are due, the Office is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 18-1215.

Respectfully submitted,



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Enclosures

Petition for Three Month Extension of Time
Additional dependent claim fees